

### **REMARKS**

In reply to the Final Office Action dated March 31, 2004, Applicants propose to amend claims 83, 92, and 121-123 to more appropriately define the invention.

Applicants have also canceled claim 125, without prejudice or disclaimer of the subject matter thereof. Upon entry of this Amendment, claims 83-88, 92, 96, 100, 101, 103, 105-116, 121-124, 126-127, and 135-137 are pending, with claims 1-82, 93-95, and 128-134 being withdrawn from further examination on the merits as drawn to a nonelected invention and nonelected species.

In the Final Office Action, the Examiner alleged that claims 128-134 are directed to a non-elected embodiment and withdrew these claims from consideration<sup>1</sup>; rejected claims 83-88, 92, 100, 105-116, 125, 128, 129, and 135 under 35 U.S.C. § 112, second paragraph, as being indefinite; rejected claims 96, 101, 103, 106, 107, and 123-124 under 35 U.S.C. §102(e) as being anticipated by Hsu et al. (U.S. Patent No. 6,236,073); and rejected claims 83-88, 92, 96, 100, 101, 103, 105-116, 121-127, and 135-137, insofar as in compliance with 35 U.S.C. § 112, under 35 U.S.C. § 103(a) as being unpatentable over Lin (U.S. Patent No. 5,721,439).

Applicants submit that the rejections of claim 125 are rendered moot in view of its cancellation and address each of these rejections as follows:

#### **I. Withdrawal of Claims 128-134**

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<sup>1</sup> However, Applicants note that claims 128 and 129 have been rejected in the Office Action under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Examiner withdrew claims 128-134 based on the reasoning that these claims are directed to the non-elected embodiment of Fig. 2 or 4. Office Action, page 2. Applicants respectfully point out that all of these claims depend from respective base claims which are generic and which are directed to elected embodiments. Applicants submit that the examination thereof on the merits would not pose a serious burden on the Office. Therefore, Applicants respectfully request that the Examiner examine these claims on the merits.

If, however, the Examiner is able to demonstrate the presence of a serious burden and insists on the withdrawal of these claims from examination, Applicants note that they should be rejoined once their base claims are allowed.

## **II. Claim Rejection under 35 U.S.C. § 112, Second Paragraph**

The Examiner rejected claims 83-88, 92, 100, 105-116, 125, 128, 129, and 135 under 35 U.S.C. § 112, second paragraph, because the recitation of “constructions” in these claims is unclear.

By the proposed amendment to claims 83 and 92, Applicants propose to delete the recitation of “constructions.” Therefore, the claim rejection under 35 U.S.C. § 112, second paragraph would be rendered moot by the proposed amendment.

## **III. Claim Rejection Under 35 U.S.C. § 102(e)**

Claims 96, 101, 103, 106, 107, and 123-124 are rejected under 35 U.S.C. § 102(e) as being anticipated by Hsu et al. Applicants respectfully traverse this rejection, because Hsu et al. fails to teach each and every elements of these claims.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102(e), each and every element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." M.P.E.P. § 2131 (quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989)). Finally, "[t]he elements must be arranged as required by the claim." M.P.E.P. § 2131 at p. 2100-69.

Embodiments consistent with the present invention are generally directed to electrostatic discharge protection devices. Particularly, independent claim 96 recites, *inter alia*, "a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region including first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other." Hsu et al. fails to teach at least this feature.

In the Office Action, the Examiner appeared to consider Hsu et al.'s floating polysilicons 140 as corresponding to Applicants' claimed current divider segments. However, Applicants respectfully submit that Hsu et al.'s floating polysilicons 140 are shown in Fig. 5 to be all in the same shape, same size, and same orientation. Hsu et al. does not disclose anywhere in its disclosure that floating polysilicons 140 include at least "first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other," as recited in claim 96.

Therefore, claim 96 is deemed patentable over Hsu et al.

Claim 101 of the present invention recites, among other things, "a plurality of current divider segments formed within and completely surrounded by the first diffusion

region, wherein said segments include a first segment adjacent to a second segment and spaced apart from the second segment by a first gap in a first direction; said segments further include a third segment adjacent to the second segment and spaced apart from the second segment by a second gap in the first direction; and said first gap being larger than the second gap.”

Hsu et al. fails to teach at least these elements. Referring again to Fig. 5 of Hsu et al., floating polysilicons 140 are arranged in a checkered pattern (Hsu et al., col. 3, lines 54-56), wherein adjacent polysilicons 140 are equally spaced apart. Therefore, claim 101 is deemed patentable over Hsu et al.

However, in the section of the Office Action titled “Response to Arguments,” the Examiner stated that “[t]he gaps between [the] plurality of current divider segments do not have to be taken only between adjacent segments.” The Examiner is respectfully reminded of the pertinent recitations in claim 101, namely, “a first segment **adjacent to** a second segment and spaced apart from the second segment by a first gap in a first direction; said segments further include a third segment **adjacent to** the second segment and spaced apart from the second segment by a second gap in the first direction; and said first gap being larger than the second gap.” (Emphasis added.) The Examiner’s reasoning is clearly inconsistent with the recitations of claim 101 and therefore does not properly support the rejection of claim 101 as being anticipated by Hsu et al.

Therefore, Applicants respectfully request that the rejection of claim 101 under 35 U.S.C. § 102(e) be withdrawn.

Similarly, claim 103 recites, *inter alia*, “a first segment having a first center-of-area, **adjacent** to a second segment having a second center-of-area, and being spaced apart from the second segment; a third segment having a third center-of-area, **adjacent** to the second segment, and being spaced apart from the second segment; a first distance in a first direction between the first and second centers-of-area; a second distance in the first direction between the third and second centers-of-area; and the first distance being larger than the second distance.” (Emphasis added.) For reasons already set forth in the above, claim 103 is deemed patentable over Hsu et al.

Regarding the rejection of claims 106 and 107 as being anticipated by Hsu et al., Applicants submit that Hsu et al. does not teach each and every element of these claims. For example, Hsu et al. fails to teach at least “a plurality of current divider segments randomly distributed within the first diffusion region,” as recited in independent claim 83, from which claims 106 and 107 depend. Referring to Fig. 5 of Hsu et al., polysilicons 140 are arranged in “a checkered pattern,” which is not random. Hsu et al., col. 3, lines 54-56, and Fig. 5.

Applicants also wish to traverse the Examiner’s allegations in the section titled “Response to Arguments” in the Office Action dated June 12, 2003, which addressed the recitation of “randomly distributed” in claim 83. Particularly, the Examiner stated that

“[t]he phrase randomly distributed within the first diffusion region can mean a set of elements having equal probability of occurrence within the first diffusion region. [P]rior art [Hsu et al.] teaches plurality of current divider segments having equal probability of occurrence within the first diffusion region. Therefore, prior art teaches plurality of current divider segments randomly distributed within the first diffusion region.” Page 11 of the Office Action dated June 12, 2003.

Applicants submit that the Examiner has misconstrued the term “randomly distributed” in claim 83. Applicants note that claim 83 recites, *inter alia*, “[a]n electrostatic discharge protection device, comprising: . . . a plurality of current divider segments randomly distributed.” Since the “plurality of current divider segments” are included in the device, it is meaningless to discuss the probability of each current divider segment occurring in the device. Similarly, Hsu et al. teaches a plurality of floating polysilicons 140 arranged in a checkered pattern. Hsu et al., Fig. 5, and col. 3, lines 54-56. At least in the sense that the Hsu et al. device includes the floating polysilicons 140, it serves no purpose to discuss the probability of those polysilicons 140 occurring in the device shown in Fig. 5 of Hsu et al., or, at most, it may be said that the polysilicons 140 shown in Fig. 5 each has a probability of 100% of occurrence. At least on this basis, Applicants respectfully traverse the Examiner’s position quoted above.

Therefore, claim 83 is deemed patentable over Hsu et al. under 35 U.S.C. § 102(e), and claims 106 and 107 are also patentable over Hsu et al. at least because of their dependency from allowable base claim 83.

Regarding the rejection of claim 123 as being anticipated by Hsu et al., Applicants submit that Hsu et al. fails to teach each and every element of claim 123. Particularly, Hsu et al. fails to teach at least “a first current divider segment formed within the first diffusion region, wherein the first current divider segment does not include a substantially straight edge parallel or perpendicular to a longitudinal direction of the channel region,” as recited in claim 123.

In the Office Action, the Examiner alleged Hsu et al.’s one polysilicon 140 as corresponding to Applicants’ claimed first current divider segment. Office Action, page

4. However, referring again to Fig. 5 of Hsu et al., each polysilicon 140 has at least one "straight edge parallel or perpendicular to a longitudinal direction of the channel region."

Therefore, claim 123 is deemed patentable over Hsu et al., and claim 124, which depends from claim 123, is also patentable over Hsu et al. at least because of its dependency from an allowable base claim.

#### **IV. Claim Rejection Under 35 U.S.C. § 103(a)**

Applicants further respectfully traverse the rejection of claims 83-88, 92, 96, 100, 101, 103, 105-116, 121-127, and 135-137, insofar as in compliance with 35 U.S.C. § 112, under 35 U.S.C. § 103(a), as being unpatentable over Lin.

First, as discussed above, the rejection of claims 83-88, 92, 100, 105-116, 125, 128, 129, and 135 under 35 U.S.C. § 112, second paragraph, is rendered moot in light of the proposed Amendment.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.01 (quoting *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2143 at pp. 2100-122 to 127.

Claim 83 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, “a plurality of current divider segments randomly distributed within the first diffusion region.” Similarly, claim 92 recites, *inter alia*, “a plurality of current divider segments formed within the first diffusion region and being randomly distributed therein.” Claim 121 recites, *inter alia*, “a plurality of current divider segments randomly distributed within the first diffusion region between said contact region and the channel and a center of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region.”

Lin is directed to electrostatic discharge circuitry. Lin discloses that the discharge circuitry comprises a number of isolated islands 81-86 arranged in a diffusion region. See Lin, Fig. 8. Particularly, Lin requires that “islands [81-86] [be] arranged in multiple rows . . . [and be] aligned along the longitudinal direction of the islands themselves.” Lin, col. 5, lines 51-53. Furthermore, Lin also requires that “[t]he center of each island in a row is substantially aligned with the center of an isolating space between two consecutive islands in the two rows adjacent to its sides.” Lin, col. 5, lines 56-59.

Clearly, Lin not only fails to teach or suggest, but also teaches away from at least “a plurality of current divider segments randomly distributed within the first diffusion region,” as recited in claim 83, and “a plurality of current divider segments formed within the first diffusion region and being randomly distributed therein,” as recited in claim 92, and “a plurality of current divider segments randomly distributed within the first diffusion region between said contact region and the channel and a center of the current divider segments formed within the first diffusion region being closer to the channel than to the



contact region,” as recited in claim 121. Therefore, one skilled in the art would not have been motivated to modify Lin to result in Applicants’ invention. Nor would there have been any expectation of success in doing so, in view of such a teaching-away reference.

Therefore, claims 83, 92, and 121 are deemed patentable over Lin. Claims 86-88, 100, 105-116, 122, 125-127, and 136-137, which depend from claims 83 and 121, respectively, are also patentable at least because of their dependencies from allowable base claims.

In addition, claim 96 recites an electrostatic discharge protection device that comprises a combination of elements including, *inter alia*, “a plurality of current divider segments formed within and completely surrounded by the first diffusion region including first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other.” Lin fails to teach or suggest at least these elements.

In the Office Action, the Examiner alleged Lin’s isolated islands 84, 85, 86 as corresponding to Applicants’ claimed “plurality of current divider segments.” However, referring to Fig. 8 of Lin, isolated islands 84, 85, 86 have substantially the same shapes. Lin even specifically requires that “all the islands 81-86 be substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment.” Lin, col. 5, lines 61-64 (emphasis added). Therefore, Lin clearly teaches away from the elements of claim 96. Therefore, claim 96 is deemed patentable over Lin. Claims 84 and 85, which depend from claim 96, are also patentable at least because of their dependency from an allowable base claim.

Claim 101 of the present invention recites, among other things, “a plurality of current divider segments formed within and completely surrounded by the first diffusion region, wherein said segments include a first segment adjacent to a second segment and spaced apart from the second segment by a first gap in a first direction; said segments further include a third segment adjacent to the second segment and spaced apart from the second segment by a second gap in the first direction; and said first gap being larger than the second gap.”

Lin fails to teach or suggest at least these elements. Lin expressly requires that “the active pitch of the islands in each row of islands is equal to about twice the distance between any two neighboring rows.” Lin, col. 5, lines 65-67. Therefore, Lin actually teaches away from the above quoted elements of claim 101. Applicants also note that they have traversed the Examiner’s allegation that “[t]he gaps between [the] plurality of current divider segments do not have to be taken only between adjacent segments.” Office Action, page 8.

In view of the above, claim 101 is deemed patentable over Lin.

Similarly, claim 103 recites, *inter alia*, “a first segment having a first center-of-area, adjacent to a second segment having a second center-of-area, and being spaced apart from the second segment; a third segment having a third center-of-area, adjacent to the second segment, and being spaced apart from the second segment; a first distance in a first direction between the first and second centers-of-area; a second distance in the first direction between the third and second centers-of-area; and the first distance being larger than the second distance.” For reasons already set forth in the above, claim 103 is deemed patentable over Lin.

Regarding the rejection of claim 123 as unpatentable over Lin, Applicants submit that Lin fails to teach or suggest at least “a first current divider segment formed within the first diffusion region, wherein the first current divider segment does not include a substantially straight edge parallel or perpendicular to a longitudinal direction of the channel region,” as recited in claim 123.

In the Office Action, the Examiner appeared to consider Lin's one of isolated islands 84-86 as corresponding to Applicants' claimed first current divider segment. Office Action, pages 5-6. However, referring to Fig. 8 of Lin, each of isolated islands 84-86 has at least one “straight edge parallel or perpendicular to a longitudinal direction of the channel region.” In other words, Lin actually teaches away from Applicants' invention as recited in claim 123. Therefore, claim 123 is deemed patentable over Lin. Claim 124, which depends from claim 123, is also patentable over Lin at least because of its dependency from an allowable base claim.

Finally, Applicants submit that claim 135, which depends from claims 83, 92, 96, 101, 103, 121, and 123, is also patentable over Lin at least because of its dependency from allowable base claims.

## **V. Conclusion**

In view of the foregoing, Applicants respectfully request that the Examiner withdraw the objections and rejections of the Office Action and timely allow the subject application.

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing the pending claims in condition for allowance.

Applicants submit that the proposed amendments of the claims do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, because all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicants respectfully point out that the final action by the Examiner presented some new arguments as to the application of the art against Applicants' invention. It is respectfully submitted that the entering of this Amendment would allow the Applicants to reply to the final rejections and place the application in condition for allowance.

Finally, Applicants submit that the entry of this Amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of this application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: June 29, 2004

By: 

Qingyu Yin \*

\* With limited recognition under 37 C.F.R. § 10.9(b).